

DIVISION OF FOREST PEST CONTROL

Northeastern Area State & Private Forestry



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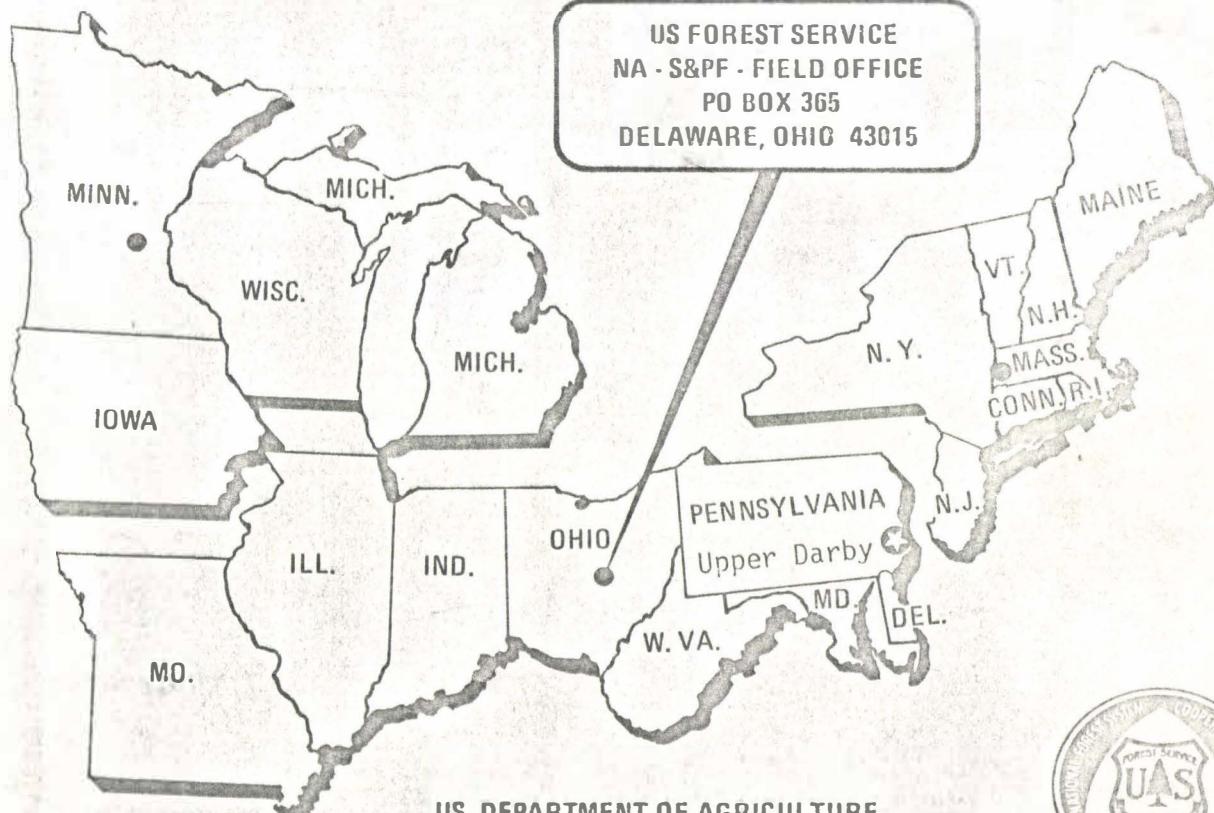
APRIL 1970

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1969 HIGHLIGHTS REPORT

DIVISION OF FOREST PEST CONTROL

DELAWARE FIELD OFFICE



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INTRODUCTION

Within the Forest Service, Forest Pest Control (FPC) is a Division of the Northeastern Area, State and Private Forestry. Delaware, Ohio, one of three field office locations of FPC, serves an eight-state area from Missouri to Delaware (see cover).

The long-range objective of Forest Pest Control is to hold economic or intrinsic losses from destructive forest insect and disease pests on forest land of all ownerships to levels compatible with the protection and maintenance of the total environment and consistent with management objectives and resource values.

In working toward this objective, our partners are the land managers - Federal, State and private. Together we seek to:

- fully utilize all available, and proven, preventive measures.
- discover, through an integrated system of field surveillance and ground surveys, forest insect and disease problems in their earliest possible stages of development.
- make scientifically sound and meaningful biological evaluations of forest pest problems that adequately predict population trends and their ultimate effects upon the host (s).
- utilize - but only when evaluations prove our action safe to the environment and reasonable in cost - the best available cultural, chemical, biological, and integrated methods to suppress problem pests.

This report presents the major accomplishments of the Delaware Field Office in 1969.

I. PROJECT SUMMARIES

A. Oak Leaf Tier

The oak leaf roller complex comprises the major defoliators of the red oak type of the Allegheny Mountains of West Virginia. Defoliation by one oak leaf tier, *Croesia semipurpurana* (Kearfott) was the primary cause of 10,000 acres of heavy oak mortality in 1966 on the Monongahela National Forest in West Virginia. Mortality due to *C. semipurpurana* defoliation has also occurred in Pennsylvania and New Jersey.

Investigations of *C. semipurpurana* have centered on phenology, rearing, and natural control factors affecting the population. Phenological events prior to larval emergence and at eclosion were documented. This insect has been successfully reared from the egg through the adult stage on potted red oak seedlings. Results from the rearing indicate that newly emerged larvae must mine in bud tissue to develop successfully.

Five parasites have been recovered from rearing *C. semipurpurana* pupae: *Brachymeria ovata* (Say), *Itoplectis conquisitor* (Say), *Scambus decorus* Wallay, and *Apanteles* sp. Two species, *B. ovata* and *S. decorus* are new records for *C. semipurpurana*. Collecting and rearing of eggs at different times of the year has yielded only one parasite, *Trichogramma minutum* Ashmead. A disease found affecting late instar larvae is currently being identified.

Taxonomic and ecological studies were initiated on other members of the oak leaf roller complex this past season. An estimated twenty-five leaf roller species have been found to be in association with *C. semipurpurana*. The following identification of Lepidopterous oak leaf rollers have been made:

Olethreutidae	- <i>Pseudexentera cressoniana</i> Clements
Tortricidae	- <i>Acleris</i> sp. - <i>Cenopis pettitana</i> Robinson
Gelechiidae	- <i>Chionodes maculimarginella</i> Chambers - <i>Chionodes vernella</i> Murtfeldt - <i>Chionodes</i> spp. (2) - <i>Dichomeris</i> spp. (2)

B. Forest Tent Caterpillar and Acorn Weevils

A biological evaluation was initiated this year to investigate effects of these insects on pin oak management in controlled flooding areas in the Oakwood Bottoms, Greentree Reservoir, Shawnee National Forest.

This area is composed of about 8,000 acres of pin oak. The acorns of this species are used as a source of food by overwintering ducks each year. Defoliation of the pin oak by the forest tent caterpillar, *Malacosoma disstria* Hübner, has been occurring on 6,500 acres of this area since 1965.

Various species of acorn weevils are present and may cause heavy mast losses.

The four major aspects of the evaluation are:

- 1.) To investigate the effect that forest tent caterpillar (ftc) defoliation is having on radial increment and stand vigor.
- 2.) To investigate the effect that ftc defoliation is having on acorn production.
- 3.) To investigate the impact that acorn weevils (*Curculio* spp.) have upon the acorn crop.
- 4.) To refine the survey technique for predicting ftc defoliation.

C. Oak Wilt

An evaluation of photographic techniques for surveying oak stands for the incidence of oak wilt was conducted in the summer of 1969 in Missouri. Of the three photo scales tested, 1/4000 was judged the most efficient. Ektachrome color was found more accurate in detecting oak wilt trees than Ektachrome infrared color. Further flights are planned in 1970 to determine oak wilt incidence in Missouri.

II. INFORMATION AND EDUCATION

A. TV Program

On July 17, 1969, Bob Doerner participated in a 30-minute forest insect and disease program on WHIO-TV at Dayton, Ohio. Also on the program were Harold Todd, CFM Section Head, Ohio Division of Forestry and Reclamation, and Don Dillon, Timber Buyer from Cedarville, Ohio. The host of this weekly show entitled "URBAN AND SUBURBAN" is Harry Butler.

B. Gummed Pictures

Prior to using gummed pictures, color prints were used in our surveillance activities to remind National Forest personnel of insect and disease pests they could expect to encounter. Color prints cost approximately \$.25 each as compared to gummed pictures at \$.06 each. Due to the lower unit cost, we were able to expand our surveillance reminder program to include other federal forest land managers and state cooperators.

Because the pictures are gummed, they can be used in many different ways, such as in fact sheets prepared for particular land managers and as I&E material in answering inquiries from the general public.

The following pictures are available upon request:

Forest tent caterpillar	Orange-striped oakworm
Red-headed pine sawfly	Oak leaf tier
European pine shoot moth	Linden looper
European pine sawfly	Annosus root rot
White pine blister rust	Red oak borer
Nantucket pine tip moth	Larch sawfly



C. Problem Recognition and Pest Reporting - Slide Talk

Slides with narrative are available upon request.

D. Wanted Poster

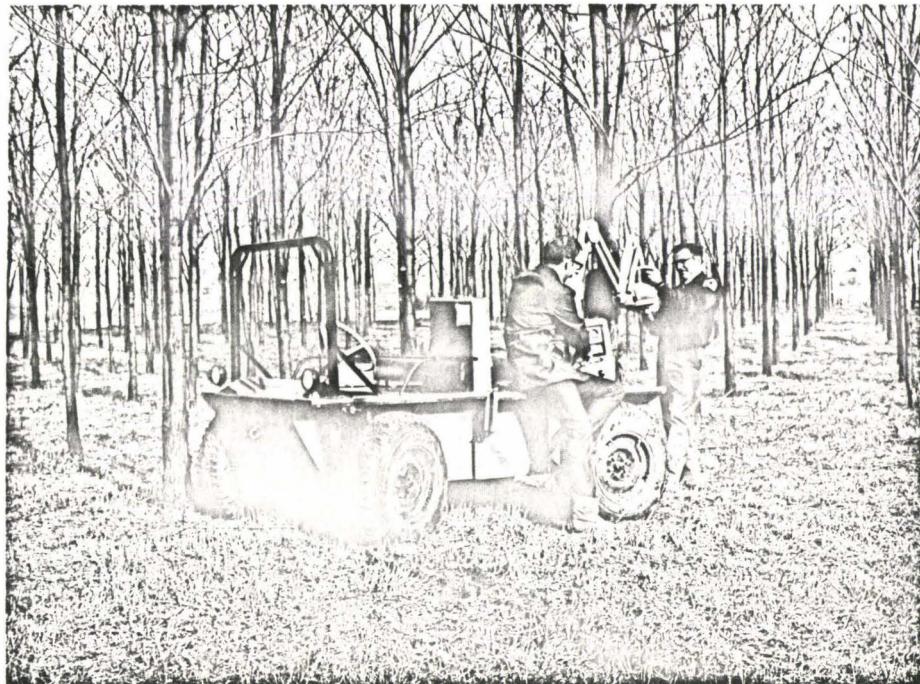
(See appendix photo). This was developed to acquaint our cooperators with our pest control staff while also reminding them that insect and disease problems should be reported early.

E. Forest Pest Outlook

(See appendix). To be effective, a forest pest surveillance program must continually be encouraged and cultured. Surveillance tips are sent out monthly to National Forest personnel during the field season and contain information on suspected tree problems which might be encountered during that period.

III. NEW DEVELOPMENTS AND TECHNIQUES

A. Forest Pest Control is striving to answer questions relating to hardwood degraders such as borers and heart and butt rots.



Self-contained field X-ray unit

The above mobile field X-ray unit under development will allow evaluation of insect and disease problems in the standing tree. The field X-ray unit consists of a modified Ritter, 60-90 kilovolt, dental unit mounted on an all-terrain vehicle. Picker TLX Polaroid 8" x 10" film or regular X-ray film may be used in conjunction with the unit. The X-ray machine is powered by a 3,000 watt alternator.

B. Copying IR photos with color film

Aerial color Ektachrome type 8443 film is developed to a 9" x 9" positive transparency. For viewing by a small group, a light table may suffice but for large assemblies, projected images are essential. Since most meetings or groups are geared toward the use of 35mm slide projectors, a technique has been found satisfactory for copying 9" x 9" transparencies with a 35mm camera.

Technique: -

The IR transparency is first placed on illuminator (daylight bulbs) and then the area outside the IR film edge masked to reduce glare. The room is then darkened, the camera focused and the film exposed. Using Kodachrome II film and the equipment described 1/4 sec. @ F-8 was judged to be the best exposure.

IV. TRAINING

Training of state and federal cooperators is one of the important Forest Pest Control responsibilities. At training meetings for our cooperators, talks are given on insect and disease problems, Forest Pest Control activities, and new developments and techniques.

A. Cooperator Training

States:

	<u>Trainees</u>	<u>Talks</u>
1.) Ohio	70 Farm Foresters	Insect and disease problem recognition - Hanson, Lautz, Doerner, White
2.) Pennsylvania	120 District Foresters	Sugar maple cambium miner - Hanson
3.) West Virginia	60 Foresters	Forest insect problem recognition - Freeman

National Forests:

1.) Shawnee	10 Foresters	Forest insect and disease problem recognition - Hanson, Lautz
2.) Wayne-Hoosier	30 Foresters	Forest insect and disease problem recognition - Hanson, Lautz

IV. TRAINING (cont)

B. Formal Training of Delaware Office Staff

V. MEETINGS

A. Cooperators Meetings

Forest Pest Control initiated a Forest Insect and Disease Conference in April, 1969, at Delaware, Ohio, for state and private personnel within our eight state area. Topics discussed at the first cooperators meeting included insects and disease problems, new survey developments, biological control, and information and education items.

The second Forest Insect and Disease Conference was held at Hueston Woods State Park near Dayton, Ohio, in November, 1969 (see photos on back cover). Agenda of this meeting is included in the appendix.

The 1970 meeting will be hosted by Pennsylvania Department of Forests and Waters at Harrisburg, Pa., in October, 1970.

B. Professional Meetings

1.) Central International Forest Insect and Disease Conference

Location:	Lake Itasca, Minn.
Attendee:	R. G. Doerner
Talk:	Insect and Disease Highlights of Delaware Field Office Area

2.) Northeastern Area Forest Nurserymen Conference

Location:	Carbondale, Ill.
Attendee:	R. G. Doerner

3.) International Symposium on Remote Sensing

Location:	Ann Arbor, Mich.
Attendee:	W. B. White

4.) Remote Sensing in the Plant Sciences

Location:	Gainesville, Fla.
Attendee:	J. B. Hanson
Talk:	Infrared Photography to Detect Annosus Root Rot

B. Professional Meetings (cont)

5.) Southern Forest Insect Work Conference

Location: Houston, Texas
Attendee: W. L. Freeman

6.) National Entomological Society Meeting

Location: Chicago, Illinois
Attendees: J. B. Hanson and W. B. White
Talks: (Hanson) Radiography for Evaluation
of Overwintering Bagworm populations

(White) Radiographs and Regressions
for Predicting Egg Mass Numbers

(D. P. Wallesz and Hanson) Notes on
the Oak Leaf Roller Complex in
Pennsylvania and West Virginia

7.) Northeastern Branch of American Phytopathological Society

Location: Concord, N. H.
Attendee: W. Lautz

VI. SCIENTIFIC PUBLICATIONS

- 1.) "Infrared Photography for Estimating Tree Mortality caused by *Annosus* Root Rot" by J. B. Hanson and W. Lautz. Submitted for incorporation in the "Proceedings of Workshop on Aerial Color Photography in the Plant Sciences" March 5-7, 1969, Gainesville, Florida.

Abstract

An infrared photographic survey of 7,000 acres of thinned shortleaf pine plantations on the Shawnee National Forest, Illinois, estimates current mortality due to *Fomes annosus* at 0.19 ± 0.10 trees/acre. Comparison of data obtained from photographing three of the same plantations in 1967 and 1968 revealed mortality has decreased from 1967 levels. Interpretation of photographs of a plantation at three different scales indicates 1:4000 was best for detection of current year pine mortality.

- 2.) "Radiography to Facilitate Bagworm Egg Counts" by W. B. White. Accepted for publication in Journal of Economic Entomology August, 1969.

Abstract

A reliable estimate of the number of eggs per case housed in the cocoon of a bagworm, *Thyridopteryx ephemeraeformis* (Haworth), can be obtained without destroying the sample. A predictive regression was developed by employing the relationship between the two-dimensional images on a radiograph of the bagworm cocoons and the actual egg counts. A dot grid count of the surface areas of a bagworm egg case (X) yields an estimate of the actual egg count (Y) when related to the predictive regression ($Y = 349.78 + 31.29X$).

VII. IN-SERVICE REPORTS

Our in-service reports are designed primarily to inform resource managers and cooperators of the insect or disease situations in their area. The reports are mainly of two types: 1.) one-page reports which are designed to present in capsule form the results of a survey, and 2.) formal reports which involve in-depth evaluations of an insect or disease problem.

REPORTS FOR THE YEAR 1969

- D-1-69 Forest Tent Caterpillar Defoliation Prediction for Oakwood Bottoms, Shawnee National Forest by William B. White.
- D-2-69 Survey of Annosus Root Rot-Caused Mortality in Thinned Shortleaf Pine Plantations, Shawnee National Forest, 1968 by J. B. Hanson and W. Lautz.
- D-3-69 Incidence of Black Knot on Black Cherry, Monongahela National Forest, 1968 by William Lautz.
- D-4-69 White Pine Root Decline on the Monongahela National Forest, 1968 by William Lautz.
- D-5-69 Survey of Annosus Root Rot-Caused Mortality in Thinned Shortleaf Pine Plantations, Wayne-Hoosier National Forest, 1968 by J. B. Hanson and W. Lautz.
- D-6-69 Virginia Pine Sawfly Egg Survey, Athens RD, Wayne-Hoosier National Forest by William B. White.
- D-7-69 Evaluation of a Bagworm Infestation on the Ava District, Mark Twain National Forest, Missouri by J. B. Hanson.
- D-8-69 Forest Tent Caterpillar Defoliation Survey on the Oakwood Bottoms, Shawnee National Forest, 1969 by W. B. White
- D-9-69 Oak Leaf Tier Complex, Monongahela National Forest, West Virginia by J. B. Hanson.
- D-10-69 1970 Forest Tent Caterpillar Defoliation Prediction for Oakwood Bottoms, Shawnee National Forest, Illinois by W. B. White.

VII. IN-SERVICE REPORTS (cont)

D-11-69 Evaluation of Forest Tent Caterpillar Pupal Collections Employing Radiography, Shawnee National Forest, Illinois, 1969 by W. B. White.

D-12-69 Evaluation of Cone Samples from National Forest Shortleaf Pine Seed-Production Areas, Missouri, 1966-69 by J. B. Hanson.

D-13-69 Air Pollution Damage to Christmas Trees in Western Maryland and Adjacent West Virginia : A Sign of Damage to the Forest Environment by W. L. Freeman, Jr.

D-14-69 Forest Insect and Disease Conditions Report, 1969 by Delaware Forest Pest Control Field Office.

--- Black Cherry Seed Orchard Insect and Disease Management by R. G. Doerner.

APPENDIX



Northeastern Area State & Private Forestry

DIVISION OF FOREST PEST CONTROL

DELAWARE FIELD OFFICE

US FOREST SERVICE
NA - S&P - FIELD OFFICE
PO BOX 385
DELAWARE, OHIO 43015



WANTED!

YOUR FOREST PEST PROBLEMS



Bill White

Larry Freeman

Bill Lautz

These men have what it takes to identify and evaluate the insect and disease situations that might be causing an environmental problem in timber production, recreation areas, seed orchards. Early communication could reward you in conserving your resources.



Bob Doerner

Jim Hanson

George Saufley





FOREST PEST OUTLOOK



SURVEILLANCE TIPS FOR MAY



WHITE PINE ROOT DECLINE - A fungus usually found on trees under twenty feet high, causing delayed budbreak and reduced shoot elongation. Foliage turns brown and remains attached to branches. Orange-red, resinous, non-swelling cankers may be visible under bark of lower trunk and root crown. To verify, send in bark and wood chips from infected area below ground level.

SALT INJURY - The application of large quantities of salt to roadways during winter months can cause noticeable tree injury in the spring. Pine needles may turn red from the tip back with all parts of the crown showing the effects. Hardwood leaves may dry at the margins, then become brown. Maple and pine are usually more susceptible while the oaks are more tolerant to salt injury.

NANTUCKET TIP MOTH - Signs of attack are webbing at base of developing needles and accumulation of resin and fecal material within webbing. New shoots are mined out and turn brown. All pine species other than white pine are attacked; shortleaf pine preferred.

PINE BARK APHID - The insect infests branches and trunks of white, Scotch and Austrian pines. The aphid is often covered with a white cottony material which, in a heavy infestation, may give the tree an appearance of being white-washed.

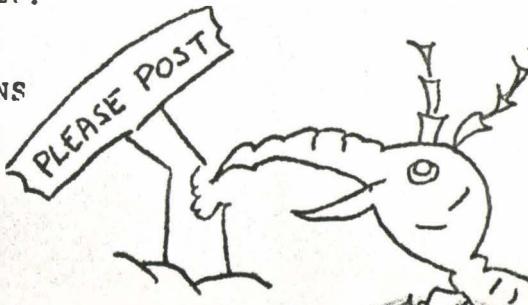
WHITE PINE APHID - This black aphid feeds on the branches and twigs of eastern white pine. Sooty mold often develops on secretions produced by the insect, giving the tree a blackened appearance.

TULIPTREE LEAF MINER - This insect causes leaf damage of yellow poplar. The adult is a black, snout-nosed weevil which makes "rice-shaped" holes in the leaves. The larvae mine in the leaves. These mines may inflate when dry. Damage occurs during May and June.

EASTERN TENT CATERPILLAR - Feeding damage from this insect occurs on apple and cherry species. The larvae are now constructing tents or webs at the branch crotch of host trees.

**SUBMIT FINDINGS ON NE 5200-1 AND SPECIMENS
FOR IDENTIFICATION TO:**

Delaware FPC Field Office
USDA-Forest Service
Box 365, Delaware, Ohio 43015



2nd FOREST INSECT & DISEASE WORK CONFERENCE

November 4-6, 1969

HUESTON WOODS STATE PARK, OHIO

Tuesday, November 4

8:30AM	WELCOME	ERNEST GEBHART, State Forester Ohio
	INTRODUCTION	LARRY FREEMAN, Field Representative, Delaware, Ohio FPC
	ROLE OF USFS IN STATE FPC EFFORTS	D. O. VANDENBURG, Ass't Area Di FPC, Upper Darby, Pa.
	REMOTE SENSING	BILL PADGETT FPC, Upper Darby, Pa.
PM	PROGRAM HIGHLIGHTS AND PROBLEMS	EACH STATE AND FIELD OFFICE
	NEW DEVELOPMENTS : OAK WILT	WILLIAM LAUTZ FPC, Delaware, Ohio
	RADIOGRAPHY	WILLIAM B. WHITE FPC, Delaware, Ohio

Wednesday, November 5

AM	WHAT CAN WE DO IN I&E	PROBLEM SOLVING SESSION
	SHADE TREE PROBLEMS	HENRY GILBERTSON, Tech. Advisor Davey Tree Expert Company
	COORDINATING EFFORTS IN AIR POLLUTION ..	SEYMORE HOCKHEISER, NAPCA Cincinnati, Ohio
PM	WORK PLANNING	ALL PARTICIPANTS

*** PHOTO SALON - EVENING ***

Thursday, November 6

SURVEY MANUAL	R. G. DOERNER FPC, Delaware, Ohio
INSECTICIDES AND 'BACKLASH'	LARRY FREEMAN
GYPSY MOTH	ART JEFFERY Pa. Dept. of Agriculture
OAK DECLINE AND OAK LEAF TIER	J. O. NICHOLS Pa. Dept. of Forests & Waters
PEST GLOSSARY	RAMON GASS Mo. Conservation Dept.
VIRUS MANIPULATION AND OTHER BIOLOGICAL CONTROLS	FRANK LEWIS NEFES, Hamden, Conn.

ATTENDEES OF 2nd FOREST INSECT & DISEASE WORK CONFERENCE:

1. Bob Doerner, Entomologist
Delaware FPC Field Office
Delaware, Ohio
2. Larry Ehlers, Ass't Staff Forester
Ohio Division Forestry & Reclamation
Columbus, Ohio
3. Larry Freeman, Field Representative
Delaware FPC Field Office
Delaware, Ohio
4. Ramon Gass, FPC Specialist
Missouri Conservation Dept.
Jefferson City, Mo.
5. Ernie Gebhart, State Forester
Ohio Dept. Natural Resources
Columbus, Ohio
6. Henry Gilbertson, Tech. Adv.
Davey Tree Company
Kent, Ohio
7. Jim Hanson, Entomologist
Delaware FPC Field Office
Delaware, Ohio
8. Art Jeffery, Entomologist
Pa. Dept. of Agriculture
Harrisburg, Pa.
9. Bill Lautz, Pathologist
Delaware FPC Field Office
Delaware, Ohio
10. Frank Lewis, Project Leader
Forest Insect & Disease Lab.
Hamden, Conn.
11. Tunis Lyon, Chief Forest Management
Dept. Forests and Parks
Annapolis, Md.
12. Al Miller, Entomologist
W. Va. Dept. Agriculture
Charleston, W. Va.
13. [Redacted], Entomologist
Dept. Forests and Waters
Harrisburg, Pa.
14. Bill Padgett, Staff Specialist
Division Forest Pest Control
Upper Darby, Pa.
15. George Soine, Staff Forester
Ohio Division Forestry & Reclamation
Columbus, Ohio
16. John VanCamp, Pathologist
Department Natural Resources
Indianapolis, Ind.
17. Dale VanDenburg, Ass't Area Director
Division of Forest Pest Control
Upper Darby, Pa.
18. Jack Warder, Ass't State Forester
Department Natural Resources
Charleston, W. Va.
19. Bill White, Entomologist
Delaware FPC Field Office
Delaware, Ohio